

# Fault and Performance Management for the Access Grid

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# What is Fault/Performance Management?

- Fault management is the process of detecting, diagnosing, and correcting faults or problems.
- Performance management is the process of detecting performance problems and taking corrective actions.

# Basics

- We broadly define a **fault** to be anything that has a negative impact on performance
- We look at entire system from end-end
  - Application
  - System
  - Network

# Long-term Research Goal

- Automate fault and performance management
- Enable QoS guarantees over a network of unreliable components

# Research Issues

- Systems complex
- Systems non-stationary
- Modeling difficult
  - System behavior models
  - Fault models
- Lack of general foundation

# Logistics Issues

- Data scarce
  - Limited examples of faults
  - Limited “normal” data
- Do results generalize?
  - Each end-end system unique

# Why the Access Grid?

- Bill Gropp
- Large, interesting end-end system
  - Potential to collect data at many different levels
  - Quality parameters of streamed audio/video provide labels
  - Public domain software
  - Cooperation

# Our Approach

- Focus on decision(control) points
  - Look at different issues from this perspective
    - Monitoring
      - What measurements are needed to make decisions?
      - Measurement frequency?
    - Correlation
      - Can a good decision be make with local info only?
      - What level of correlation is necessary?



## Our Approach (cont.)

- Model decision points
- Use simulation to understand ***interactions*** between decisions

# Where we are starting

- Identify/model decision points
  - Network
  - vic, rat
- Data collection infrastructure
  - Existing statistics
- Simulation of Access Grid
  - Opnet

# Data Collection Help

- If your site would be willing to participate in our data collection please contact me at [hood@iit.edu](mailto:hood@iit.edu)

## Side benefit

- Public database of (cleansed) data to be used for research purposes